



# TERMINATORR™ Missions

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## 1. General Information

The industrial and municipal incinerators release toxic molecules (particles and gases) into the atmosphere that migrate into the natural elements (air – water – earth) and contaminate directly and indirectly our environment (biotope). There exist presently already efficient filters able to trap the solid particles and certain metal salts.

However, at the present time, on a planetary level, there are no methods available that allow to destroy 100% of the dangerous molecules such as dioxins, furans, PCBs, pesticides etc. that are rejected from the domestic incinerators (MSW: Municipal Solid Wastes) as well as from the industrial incinerators.

**TERMINATORR** is a project at international scale that aims at implementing plasma technology (high temperature chemistry) to destroy very dangerous contaminants classified as dioxins, furans and other molecules that are threats to biological viability and which are slowly or violently destroying our eco-bio-systems.

It has been epidemiologically shown that the dioxins, a group of 273 different chemicals and 100 chemicals that promote dioxin formation, affect and alter the cellular and biological viability of our genetic material (DNA) and cause irreversible, carcinogenic and mutagenic reactions.

Spermatogenesis for example (sperm production) has considerably reduced during recent times and some reliable sources suggest that there is a 30 % reduction in man's ability to reproduce normally.

Consequently, human reproduction in about ten years will be considerably compromised if measures are not adopted in the short term. Furthermore, the weakening of our immune system is a collateral effect of the pathological action of dioxins, furans and other toxic molecules that are currently produced by human activity. Urban waste incinerators produce large amounts of dioxins, furans, etc. and often in an uncontrolled way that does not respect the current European and American standard of 0.4 to 4 ng of dioxins / m<sup>3</sup>. (Note that in some instances, this limit is exceeded between 10 and 50 times the standard level !)

However, it can be underlined that, presently, none of the civil or industrial incinerators respect these standard norms of maximum 4 ng/m<sup>3</sup> (EPA). The reason for this is simple: there exists no technology for the moment that allows such a low level of emission or the 0-level.

In practice, we do not really know the actual dioxin emissions from incinerators because dioxin detection and measuring equipment are very expensive (about 400,000 to 500,000 \$). This explains why most municipal incinerators do not monitor dioxin emissions. Additionally, incinerators are often quite near residential areas and air currents displace the fumes and the dioxins from them over tens of kilometers and thereby quietly affect the inhabitants and subject them to considerable health risks. Whilst the risks were initially unavoidable and undetectable, they can be biologically confirmed in the short and medium term: cancers, allergies, fetal malformations, sleep and neurological and behavior disorders, reduced walking distances, reflex activity lesions and memory effects.

It is also extremely difficult to execute efficient controls over the existing incinerators, because this requests very advanced and costly techniques with machines such as GC-MS and ICP-MS.

The present methods are about 70% efficient in absolute values, but the residual molecules (30%) that are created become cooler around the walls and form stable molecules called "promoters" that happen to be even more dangerous than the original basic dioxins produced by the incinerators.

Despite all the recycling programs that have been implemented and which have variable results depending on the country (10 - 18 % at most), it is technologically, scientifically and chemically obvious that the thousands of incinerators in Europe and everywhere on Earth must continue to eliminate the waste from our activities. This currently result in a considerable harm that threatens our biological integrity (significant reduction in immunity and development of multiple pathological conditions).

In general, the percent of dioxins emitted are not known by the public, because we are here in front of an ethical, moral and economical problem. Since there is no solution available for the moment, it is not recommended to alarm the population and inform them adequately.

The same method of silence is applied as far as the international polluters are concerned who "recycle" their wastes in an illegal manner by discharging thousands of tons of toxic residues in countries and where no serious controls with regard to the level of toxicity of the discharged materials can be carried out.

## 2. Description of TERMINATORR Machines.

Note: **TERMINATORR** is derived from the words **Terminate** and **Torr** (a unit of pressure in physics).

The **TERMINATORR** machine for the total destruction of almost all hazardous materials was invented by **Prof. Dr. Christian Assoun, specialist in High Temperature Plasma Chemistry, Founder and President of Glycan Industries.**

Dr. Christian Assoun, of French nationality, holds a Ph.D. in Atomic Spectroscopy (University of Paris VII).

Earlier undertakings by Dr. Assoun includes research at the "Centre National de la Recherche Scientifique" (CNRS, France's principal Government Scientific Research Organization) and at the United States' N.A.S.A. Jet Propulsion Laboratory, in Pasadena, California where he was the author of "Plasma for Extraterrestrial Resources and Applied Technologies" PERT - N.A.S.A Memorandum N° 354381020, Feb. 27, 1981.

First presentations of the **TERMINATORR** project have been made in 2001 in the Military Command Center, FORT LEONARD WOOD, Missouri.

Dr. Christian Assoun has been nominated in May, 2004 Dr Honoris Causa for Medicine and Pharmacy at University of Cluj Napoca in Romania, and member of the Senate.

Prof of Physics at American Institute of Quantum Sciences and Plasma Technologies NP org501c3- Pasadena CA - 2016

**TERMINATORR consists of a torus of 8 meters of diameter and about 60 centimeters of section, and works with an ionized gas at a temperature between 5,000°K and 13,000 °K at a pulsed mode.**

**TERMINATORR** destroys hazardous materials through a unique application of thermal plasma. In contrast to other methods, which destroy said materials at levels of between 70% and 85%, **TERMINATORR** attains a destruction level of 99.99999%.

The difference is crucial. At the lower level and within a context of significant volumes to be treated, enough residues of hazardous material remain active and dangerous. Legislation, notably in O.E.C.D. member states, is increasingly demanding that destruction reach higher levels than 99.99 %. Through its improvement in thermal plasma techniques, including working temperature of at least 5,000°K and temperature at the center of the plasma reaching 13,000°K, **TERMINATORR** responds to the legislative requirements.

It should be noted that the procedure **TERMINATORR** which is unique in terms of total destruction (99.99999%), has initially been conceived for the American Military Industry to allow the destruction of the surplus of stockpile of Weapons of Mass Destruction (WMD), Nervous Gases (NG) and Anthrax.

It is well known by specialists that, when molecules first transit through a plasma, they (because of their diamagnetic properties) attempt to circumference around the hot core of the plasma where diamagnetic forces and properties exist and confine them to the parietal areas of the plasma where the temperature cannot exceed 620°C, whereas the molecules entering this area for a brief period (micro or millisecond) are NOT destroyed or are only partially destroyed and can subsequently reconstruct PROMOTERS of these toxic molecules.

**Note:** Relation between **Kelvin** temperature and **Celsius** temperature is :  **$T^{\circ}K = T^{\circ}C + 273$**

The inventor of **TERMINATORR**, Prof. Dr. Christian Daniel ASSOUN, has set up a process that provides a Unique Recycling System which allows for a plasma **enriched with other elements**, to confine, during several minutes, dangerous elements AND TO DESTROY THEM DEFINITELY, bearing in mind that in conventional plasmas the passage of dangerous molecules is limited to a few milliseconds only.

With the introduction of **TERMINATORR** units to their disposal systems, industrial plants producing hazardous wastes can continue to function, saving jobs while protecting the environment.

A large-scale industrial utilization of **TERMINATORR** would facilitate a given country's adherence to the **Kyoto Protocol**: an issue of considerable international concerns with regard to the current stance of the United States. Similarly, hazardous industrial and military stocks can be totally destroyed.

Types of residues that can be treated by **TERMINATORR** include:

- all types of gases (except fuel and explosive gases);
- gaseous ejections containing hazardous biological and/or chemical molecules (dioxins, furans, PCBs, etc...);
- low radioactivity; industrial and military (NG) toxic gases;
- biological liquids;
- chemical liquids such as chlorinated hydrocarbons, acids, bases etc (except explosives);
- prionic, part of genes ,viral, retroviral or bacterial liquids and residues;
- industrial mixed wastes, etc...

Thus this new technology is also appropriate to eliminate soil, sludge, containerized toxic chemicals, and other stored industrial wastes : It allows elimination of contaminated soils, remediation of industrial ponds and toxic sludge sites, as well as old field remediation, including old waste sites now part of EPA lists.

The **CAPACITIES OF DESTRUCTION** depend, of course, on the nature of the residues:

- gases : 200 m<sup>3</sup>/hour,
- liquids (via dispersion) : 1,000 liters/hour,
- solids (via plasma ablation) : 1,000 kg/hour.

The weights of the **TERMINATORR** units range from 3 to 8 tons (excluding generators). Size in width ranges from 0.60 to 1.50 meters. Size in length ranges from 6 to 17 meters. In all circumstances, the given **TERMINATORR** units can be transported and assembled on-site in the form of industrial kits.

Although **TERMINATORR** can treat all types of waste residues, it is the intention of **Glycan Group** to concentrate, initially, on the destruction of hazardous materials, where, as indicated above, **TERMINATORR** is unique in terms of the necessary total destruction. In this market, the needs are great and increasing. Moreover, due to the dangers associated to the subject materials, the urgent nature related to their destruction and the non-availability of any other process, potential clients will be willing to budget appropriate expenditures. The latter can be in several different forms: (a) purchase of given types of

**TERMINATORR** units; (b) servicing of the client's needs by **Glycan Group** or (c) a combination of a client's purchase of the **TERMINATORR** with **Glycan Group** servicing.

With regard to the straight sale of a given **TERMINATORR**, it is estimated that the acceptable price, depending on the type, would average US\$ 3 million. Servicing will depend on the level of the material's danger.

Based on the U.S. Environmental Protection Agency's current indications, prices are as follows:

**Low level of danger:** US\$ 400-600 per ton.

**Hazardous wastes:** US\$ 600-1,000 per 55 gallons (250 kg). For gases, **Glycan Group** will invoice on the basis of hours of treatment, with different rates depending on the gases to be treated.

**Bio-hazardous wastes:** Depending on risks, the price will be determined on the basis of U.S. Government indications, which are estimated at US\$ 2,000 per barrel of 250 kg.

In the United States alone, there are, according to the E.P.A., some 90,000 hazardous sites that need to be treated. At least as many are estimated in the other member states of the O.E.C.D.

With marketing concentration primarily on the hazardous sites, **Glycan Group** expects to sell and/or operate some 15,000 **TERMINATORR** units in the O.E.C.D-USA . and a further 5,000 in the rest of the world.

Within a context of sales and/or servicing averaging US\$ 3 million per site, revenues could reach US\$ 45 billion. In addition to delegation to country/regional representatives, it is envisaged that marketing would involve joint venture participation with the manufacturers of equipment and products utilized in the construction of **TERMINATORR** units.

**Glycan Industries** has developed a scientific prototype of **TERMINATORR**, with estimated expenditure of US\$ 5 million. The scientific prototype **TERMINATORR** has been developed in Spain. It is **Glycan Industries's** intention to proceed in the construction of several full-scale prototypes. Three units, for military and industrial utilization respectively, will be built for the United States market, where, notably in Missouri and its U.S. Army facilities at Fort Leonard Wood, confirmed interest has been obtained. several other industrial units will be constructed for demonstration purposes directed at European clients.

**Furthermore, it is interesting to note that existing installations don't need to be modified because **TERMINATORR** is connected directly to the fume and smoke OUTLETS of the incinerator.** This means that incineration methods are unchanged and only the emissions are monitored and transformed into benign molecules.

### 3. Contacts

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### 4. Perspectives

The procedure **TERMINATORR** provides precious services in the civil, industrial and military field in industrialized countries but it will also provide assistance developing countries in their growth by preventing errors that have been committed by the industrialized countries. **TERMINATORR** may not only be applied to prevent further contaminations of the planet due to industrial, civil and military pollution but also to remediate and reduce present contaminations. It is the primary tool for destroying all types of hazardous wastes.

The humanitarian and planetarian consequences of the **TERMINATORR** applications are considerable as can be seen above. Most pollution sites could benefit and be improved with the **TERMINATORR** system whose success potential is higher than all other types of waste remediation technologies.

The numerous spin-offs of the **TERMINATORR** patents cannot be developed in this document which means to be a synthesis. However, we can mention an interesting example of a spin-off of the **TERMINATORR** technology which would be used in the mining industry, mainly for the extraction of Precious Metals (PMGs), the procedure is called the **TERMINATORR Hybrid Technology**.

**TERMINATORR Hybrid** will allow to treat precious metal without pollution and without utilizing Mercury (Hg) or toxic acids such as cyanures (AR-AK -CN).

The benefits of the application of **TERMINATORR Hybrid** will be considerable for continents such as Australia, America and Africa who are producers of precious metals, such as Gold (Au) and the Platinum group (Pt, PMG(s)).

Indeed, the mining industry of precious metals is an extremely polluting industry and becomes more and more an important problem as far as the public health is concerned, but also regarding in general our eco-system.

The continents where **TERMINATORR** 's application will be immediate would include Asia, India and Africa – the eco-biological benefits as well as the Planet benefits are obvious and considerable.

The **TERMINATORR Hybrid** technologies will be conceived in Switzerland and assembled and developed in the countries who are concerned and touched by the pollution due to mining activities.

## TERMINATORR™ GLYCAN INDUSTRIES

APPLIED TO:

### Climate Change and Global Warming

**(CO<sub>2</sub> – CO – CH<sub>4</sub> - S<sub>x</sub>O<sub>y</sub> - N<sub>x</sub>O<sub>y</sub>) REMEDIATION  
RECONSTRUCTION OF OZONE LAYER ( O<sub>3</sub> )**

### PRELIMINARY REMARK

PROBLEMS:

#### **IMMEDIATE AND LONG-TERM IMPACTS OF THE CLIMATE CHANGE and GLOBAL WARMING ON HUMAN OR ANIMAL BIOLOGY.**

**CO and CO<sub>2</sub>** are immediately harmful to animal species by altering the respiratory system, cerebral functioning (AD - ALZHEIMER disease and NEURODEGENERATIVE diseases) and cells damages (OXIDATIVE STRESS).

It can be considered that oxidative stress is a slow serial killer, and that it can lead to a whole series of pathologies including cancers, among others..., that affect millions of persons a year.

One of the most immediate consequences is the appearance of opportunistic diseases directly linked to the weakening of our immune defenses (induced immunodepression) but also a significant alteration of the spermatogenesis.

**CO and CO<sub>2</sub>** contribute to the locoregional greenhouse effect and modify the densities of atmospheric water vapor masses, but also modifies the kinetics of chemical



reactions induced by solar radiation (interaction CO-CO<sub>2</sub>-CH<sub>4</sub>-N<sub>2</sub> -O<sub>2</sub>-other rare gases - and atmospheric water vapor).

The production of industrial CO<sub>2</sub>-CH<sub>4</sub> and CO seems to be completely responsible for global warming (can be remediated with **TERMINATORR**), but also indeed of some geological, geochemical and volcanological movements and of the natural chemistry of atmospheric masses containing water vapor and nanoparticles generated by soils eroded by the violent kinetics of the winds.

## SOLUTIONS

### **RESPONDING SERIOUSLY AND METHODICALLY AND REMEDY DEFINITELY TO THE CAUSES OF CLIMATE CHANGE AND GLOBAL WARMING**

The consequences of industrial pollution, the production of CO and CO<sub>2</sub>-CH<sub>4</sub> but also SO<sub>2</sub> (Sulfur Dioxide) and S<sub>x</sub>O<sub>y</sub> and N<sub>x</sub>O<sub>y</sub> linked to other molecules, can be eliminated by new technologies (plasma tools Terminorr).

Patented Plasma Technologies (PCT -International) including **TERMINATORR™** machines developed by **Glycan Industries** make possible to permanently destroy the toxic or dangerous molecules including the molecules CO, CO<sub>2</sub>,CH<sub>4</sub>- S<sub>x</sub>O<sub>y</sub>-N<sub>y</sub>O<sub>y</sub>, others.

Gases from polluting industries are harvested in the highest part of the stacks (OUTLET) and are sent to machines TERMINATORR section (INLET) in order to be destroyed.

Reasonably the emissions of fumes and gaseous pollutants will be ANALYZED by ICP-MS-ICP-AES-GC-MS methods to calibrate the plasma mixtures to be applied to toxic molecules or unknown toxic compounds (included derivatives from WMD - NG).

### **INDUSTRIAL OPTION:**

Toxic fumes based on the presence of SO<sub>2</sub> may be bubbled in water tankers to remove toxic fumes from possible recombinant acids which could damage the pure Silica sections of **TERMINATORR** plasma machines.

The CO<sub>2</sub> and CO pollutant molecules will be destroyed and the final products of the destruction will be H<sub>2</sub>O water of oxygen O<sub>2</sub>, Nitrogen N<sub>2</sub> and plasma gases (Ar) feeding the plasmas will be recovered and liquefied.

The gases useful to the Earth's atmosphere will be returned to the atmosphere after analysis on line-GC-MS-ICP-MS.

An important item to discuss is the power supply of the Terminorr machines, it will be ensured by the factories in the case of COAL POWER STATIONS which use raw

materials like coal to create electricity, but also with possible complements Solar energy or fuel cell.

The industry will need to become familiar with plasmas technologies to gain maximum benefits from these technologies and recreate jobs.

**TERMINATORR** applied to:

- **EXTRATERRESTRIAL MINING AND REFINING**
- **SPACE COLONIZATION**
- **SPACE DEBRIS REMEDIATION**

Space colonization NEO-LEO-Moon-Planets(moons)-Deep Space will generate important contamination directly linked to industries in Space.

**TERMINATORR** can do the job of decontamination, including some spin-off of the technology in order to apply to Extraterrestrial Mining and Refining and Space Debris Remediation.

To conclude, the **TERMINATORR** technologies for the total destruction of almost all hazardous materials are most important from a Humanitarian point of view, because it will improve not only our environment which is vital for all living creatures, but also the vital liquid-**water**-which is in danger on our planet.